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# THE JOURNAL OF PHILOSOPHY

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THE JOURNAL OF PHILOSOPHY

## THE DUALISM OF MEANS AND VALUE[1]

WHEN Augustine wrote the following words he was reiterating what was already familiar: "if, journeying through this world, away from God, we wish to return to our own land where we may be happy, this world must be used, not enjoyed."[2] The medieval attitude toward the world emphasized the inner life of the individual as that of the ancient Greek could not; and this medieval attitude furnishes the background for understanding much that occurs in modern scientific thought. However much the Greek may draw distinctions between primary and secondary qualities, being and becoming, they were nevertheless distinctions between things in an objective world. In the chaos that occurred with the breakdown of Greek civilization, skepticism was the outcome. From this the escape lay in the discovery of a realm of inner experience, as a general doctrine, and the transference of interest and value to that subjective world. Gregory the Great, in terror at the sack of the Eternal City, saw the necessity of penance by terror, by suffering, by refusing to give way to the pleasures of this world. This world was but the opportunity for salvation from Hell to Heaven. It was material, the instrument, the scene of a divine drama that was to culminate in a divine purpose. The Christian found himself with a conflict of inner motives that was, therefore, the center of his whole attention. Of these motives, those that were essentially his were evil; other motives were the voice of God. In the word of a modern, perhaps, the typical medieval attitude was to indulge in evil imagination and then seek to overcome it. This sinful inner nature of man was the self which must be overcome by the miracle of divine grace. The problem was not one of selecting from the world what was good or bad, but of purging evil from the soul itself. The typical statement of this was the doctrine of total depravity. Man's inner actions were in rebellion against God. The earthly community—the Church—was but an outward manifestation of the inner community against which man was rebelling. The Church was preserving the values of a civilization that was gone, and was

[1] Read in part before the Lehigh Valley Philosophy Club, Bethlehem, Pa., October 24, 1930.

[2] Taylor: *The Medieval Mind*, Vol. I, p. 66.

attempting to give them to a barbarous and warlike people, out of whose life those values never arose. Values that grow out of one's life, or a social organization that is built in response to desires that thrust themselves upon one in the events of his daily life, may be in some sense objective. But the Church was not a society which had grown out of the daily life of the barbarian; nor had its values. The Church and its values were imported and foreign. They were truly of another world. Consequently, they had simply to be accepted without objective reference; they had to be taken over in the inner soul without question and in childlike faith. On the part of the convert, it was not a problem of intelligence, question, experimentation, or reasoning. Man was transported back to a preintelligent period. Intelligence is relevant to control of objective affairs. The objective values of the natural life of the barbarian were worldly and of the devil, from which he must flee. Objective things were transitory and unimportant. The things of God were alone important. Intelligent control toward successful activity was blasphemy. Man was nothing—a vile worm. Man is to admit all his worthlessness and to confess the vanity of all worldly goods before God would save him. Such a salvation was in the nature of the case subjective, and could not be objectified. It was a change of subjective, emotional states of consciousness, rather than an objective working out of the expression of life impulses. The Church did not intend to give man an opportunity to build anything, to reconstruct society, or to achieve something for the world; but rather to give him the choice between two states of mind, one of which was sin, and the other one of humility, penance, and sacrifice unto salvation. Evil was not constituted by some objective harm, but by stiffnecked refusal of the way of salvation set forth by God's Holy Church. Good was not found in objects enjoyed, but in the acceptance and contemplation of the things of the spirit. In such a state of subjectivity, values are qualities of the inner world. Material things are neither good nor bad. No one created the Greek world. But God created the Christian world, and that for a purpose—the salvation of man's immortal soul. This is the meaning of the world. What is valuable is located in the subject; the meaning of the world lies within the depths of the soul.

What I wish to emphasize is that the separation of the world of values from the material world had now taken place. And this separation of preconceived values out of the world left the scientist free. Thus the Church performed a service for the sciences, however much it may regret the use to which the scientist put it. The world of the Greek had been accepted for what experience showed it to be. The world of Plato and of Aristotle was a world of value

and of accident as well as of order. Indeed value entered into order as being the final cause. Thus Aristotle could explain the orbit of the heavenly bodies in such terms. The heavenly bodies were perfect, so traveled in perfect and eternal orbits, i.e., circles. Or again, in the case of earthly things, values or final causes enter as the developed potentiality of matter. The discrepancies between the ideal form and the individual thing, the variations of the individual things within the infima species, are accidents. And accidents represent the resistance of the matter to the form. This doctrine of eternal and perfect forms was taken over by the medieval society. *Ante rem* they were ideas in the mind of God. To some extent the question of resistance of matter and form entered, but only in the willfulness and error of man—the war of the flesh and the spirit. Man was a free moral agent whose will could by God's mercy accept or reject the laws of his creator, as no material body could. He had fallen from grace. Hence he was prone to error and his states of consciousness were not predictable. But otherwise the medievalist was a rationalist. He did not need a theory of accident to bolster his doctrine. Indeed God made use of evil man and of the devil. None of them was any surprise to him. They fitted into his divine purpose nicely. He had, in his infinite wisdom, created the universe a perfect and harmonious whole, of intellectual order. Thus did the Church abstract values, accidents, emotions, feelings, etc., from the scientist's material, as the Greek had never been able to do. The scientist no longer dealt with final causes, a teleological world or its purposes; nor was he permitted to do so. When Galileo discovered spots on the perfect heavenly bodies, he kept himself from being toasted for his false prophesies by pleading that science had naught to say of perfection or imperfection. The scientist's world was not a world of values. It was a purely intellectual world. He dealt with a world of mass and motion—things that could be measured and predicted. "Force," for example, was not a feeling of effort. It was defined in terms of mass, space, and time. Since the Church had transferred values to consciousness, science might continue to do so. Hence consciousness became the convenient dumping ground for all that did not answer to the demands of mathematics. The scientist thus kept in his world that which could be measured and predicted—in a word, that which responded conveniently to mathematics, and rid himself of all else. Mathematics demanded discrete, homogeneous units. Hence the mass particle became the reliable thing in nature. It was reliable because it was measurable and predictable, i.e., bound by eternal and immutable laws. Before creating the world, God had mastered Euclid. It was, as we have said, a purely intellectual world. It was, as Augus-

tine had said, a world not to be enjoyed, but to be used. Values had found their place in another realm.

The dualism of the seventeenth century represented a shift from a social compromise between God and Caesar to an equally social compromise between God and the scientist. But that compromise was one that could only remain standing so long as the only thinkers were physicists. The Revolution must destroy it. Where "good" and "bad" are fundamentally affairs of *desiring*, rather than of things desired, values are thereby stated in terms of states of consciousness rather than in terms of material things. Thus, as we have said, the physical scientist could take advantage of this to eliminate from his world whatever could not be brought to terms with mathematics. And Galileo could say:

> I am inclined sufficiently to believe . . . the thing that produces heat in us and makes us perceive it, which we call by the general name fire, is a multitude of minute corpuscles thus and thus figured, moved with such and such a velocity. . . . But that besides their figure, number, motion, penetration and touch, there is in fire another quality, that is heat . . . and I judge that it is so much due to us that, if the animate and sensitive body were removed, heat would remain nothing more than a simple word.[3]

Or again:

> I think that these tastes, odours, colours, etc., on the side of the object in which they seem to exist, are nothing else than mere names, but hold their residence solely in the sensitive body; so that if the animal were removed, every such quality would be abolished and annihilated.[4]

The philosophic elaboration of this position in the seventeenth century by Descartes and Locke involved a double dualism: "the epistemological dualism of the theory of representative perception, and the psychophysical dualism which conceives empirical reality to fall asunder into a world of mind and a world of matter mutually exclusive and utterly antithetic."[5] It is true that materialists exhibit some squeamishness at the admission of minds or spirits. But though they gag at the gnat, they swallow the camel, for they are in as great a difficulty as are spiritualists. I can not but agree with Tomasso Campanella that it is quite as much a miracle that atoms knocking together or in motion should produce a sensation as that corporeal bodies should arise from incorporeal ones.[6] What I wish to point out is that the fundamental difficulty is still present; there is as much need for miracle in materialism as there is in the psychophysical dualism of Descartes, Locke, and Malebranche. In the case of either, there is the same disconnection between the realm of value

[3] Burtt: *The Metaphysical Foundations of Modern Physical Science*, p. 78.
[4] *Ibid.*, p. 75.
[5] Lovejoy: *The Revolt against Dualism*, p. 3.
[6] Höffding: *A History of Modern Philosophy*, Vol. I, p. 152.

and the physical world. Let us note that the word "sensation" is not a proper name; it has connotations. It does not merely denote what we have in experience, but proposes to introduce theories. Affairs of experience can not be identified with the motions of molecules, atoms, or electrons, or with fields of force, even though the latter are said mysteriously to cause or generate the former, and hence once more we have a dichotomy between a world of sensations, appearances, values, or what you will, and a material world.

One of the most brilliant defenses of dualism is Mr. Lovejoy's *The Revolt against Dualism*. I do not wish to give here a review of it, but rather to select certain phases such as may suggest, to the contrary of Mr. Lovejoy's thesis, some possibility of continuing the "revolt." What is perhaps the high point of the book is the point we have just been trying to show. The most significant line of cleavage, he says, with respect to theories of perception, is that which divides *all* generative theories from all others. If, in the act of perceiving, each of us makes temporary additions of his own to reality, it is a question of secondary though not of negligible consequence whether these are supposed to be psychically or psychophysically or purely cerebrally generated additions. In all such theories it at any event remains the admitted fact that (most or all) of the things I actually, immediately, sensibly perceive, exist only in so far as I, an individual organism, exist and exercise a function of a biologically very peculiar sort. And if all the immediate content is thus engendered by and relative to the perceiver, the epistemological situation remains the same, whatever variety of the generative theory be adopted. If I am at any given moment to have knowledge of events or entities independent of my individual constitution and momentary condition, I must reach these ulterior realities through present and private data; and the ultimate justification, if any, for doing so, must be found either in reasonable faith, or in some process of probable inference. The traditional reproach against historic dualism has been that this penetration through and beyond the immediate to the not-immediately-given is impossible and inconceivable. If this be a difficulty it is a difficulty shared by all generative theories. It has become almost the established habit to play loosely with terms; to use the language after rejecting the substance of naïve realism; sternly to condemn "dualism" while accepting its essentials; to express the utmost horror of "bifurcation" and then to proceed cheerfully to bifurcate.

The issue as laid down by Mr. Lovejoy is that "if (*a*) the argument for epistemological dualism is cogent, and if (*b*) no place among physical objects can be found for perceptual and other data as epistemological dualism conceives of them, then, on these grounds

alone, psychophysical dualism (with respect to content) would be established."[7] I should like to point out the way in which (*a*) seems to me either not to be plausible or not to be relevant to the conclusion. Epistemological dualism, so we may remind ourselves, stands for the assertion of "duality, that of the content or datum at a given moment immediately and indubitably presented, and the reality said to be known thereby."[8] It is the assertion that "all knowing is mediated through the presence . . . of entities which must be distinguished from an ulterior reality which is the true objective of knowledge."[9] Now, although such terms as "content or datum," "ulterior reality" and "the true objective" have connotations in certain systems of philosophy, namely, psychophysical dualism, such as may beg the whole question, Mr. Lovejoy, I take it, wishes us to ignore those connections. If we do, the above statements seem innocuous enough. They are taken to mean simply that an act of knowing involves a dualism between what is present and the object known. In this case it is irrelevant to a psychophysical dualism; or at least I shall point out why I think it is.

But before I do that, I wish to mention another proposition which may be involved, and that is that perception is a cognitive act. For if "epistemological dualism" is taken to include the notion that perception is cognitive, then it would be relevant to (*b*) above and to the conclusion. Here we are on old ground.[10] This proposition seems to be quite unplausible, as Mr. Dewey has pointed out. In the words of Mr. Lovejoy, himself, "if a datum . . . is what it is solely from the standpoint of the percipient and only for him, and, in the last analysis, only by virtue of his individual constitution, then his experiencing of it would not appear to afford what is commonly understood by knowledge."[11] What, then, is meant by the assertion that perception is cognitive? Mr. Lovejoy has further pointed out, and rightly as I think, that "when immediate data are simply taken as ultimate . . . they are *eo ipso* . . . innocent of epistemic pretensions."[12] Error is then inconceivable. "Error," we are informed, "must consist in attributing some character now present in perception or imagery, or represented by a verbal symbol, to *another* locus in reality, where it in fact is not present."[13] Evidently the supposition that perception is cognitive involves the notion that perception is an attribution of

[7] *Ibid.*, p. 32.
[8] *Ibid.*, p. 15.
[9] *Ibid.*, p. 16.
[10] Dewey: *Essays in Experimental Logic*, pp. 250ff., and *Experience and Nature*, p. 310.
[11] *Op. cit.*, p. 121.
[12] *Ibid.*, p. 127.
[13] *Ibid.*, p. 23.

characteristics to (external) loci or to physical things or to events, presumably non-experiential.[14] But Mr. Lovejoy adds, "It is, of course, not immediately apparent that a character which exists only as a consequence of a percipient event in me, and only while I am perceiving it, *can* legitimately or intelligibly be said to be an attribute of an object or an 'event' assumed to exist independently of perception; or even that such a relative character can be held to be truly situated at the locus (spatial, temporal, or spatio-temporal) of such an object or event."[15] Shall we conclude, then, by attributing all such characters to the percipient organism and thus avoid all error in the future? Such a conclusion would be considered an absurdity, no less by Mr. Lovejoy, I suppose, than by anyone else. And I have not mentioned it to suggest that he would hold such a doctrine. Rather have I wished to point out how difficult, to me at least, is the term "attributing" when it is used for the purpose of showing perception to be cognitive. That there are "meanings" in perception, I have no reason to doubt. And, I take it, some of these meanings have arisen from non-reflective experiences, while others have arisen from reflective experiences. In any case, where and when they are called into question reflection may arise. But where they are just perceived—*where they are simply accepted and acted upon*—where no question arises, where there is no attempt to determine upon the meaning of what is present, how can there be said to be judgment? And judgment, Mr. Lovejoy says, is necessary in order that there be truth or error, i.e., a cognitive act. But this problem has been the subject of longer dissertations, and I leave it with that. Only I may add that if perception be defined in such a manner as to require an *actual act of attributing* its content either to a non-experiential material world, or to an equally non-experiential sensorium, then perception has arisen rather late in the history of man, and even now occurs very rarely, chiefly in academic circles.

Turning now to the second question, it seems to me that, if we do not add the proposition that perception is cognitive, the duality of knowledge is irrelevant to the conclusion that there is a psychophysical dualism. Mr. Lovejoy has insisted that the Berkeleyian reduction of dualism to idealism is irrelevant to the antecedent quarrel between realists as to whether or not the characteristics, upon which the realists are agreed as essential to a physical world, imply a dualism between a mental world and a transcendent material world. This may be true. But it is true only if the dualism of knowledge is irrelevant to the proposition that there is a mental

[14] Santayana: *Scepticism and Animal Faith*, pp. 187, 233, 282, and Broad: *Scientific Method*, p. 268.

[15] *Op. cit.*, p. 97.

world and a transcendent material world. For the characteristics of a physical world, in so far as a realist need agree to them, are tools of analysis required for mediating between what is immediately there and what is not there, i.e., for determining upon the meaning of what is at hand. They answer to the dualism of knowledge. Now the argument of Berkeley was, I take it, that these tools of analysis did not imply a transcendent material world. And that is, I should say, relevant to the proposition that they do; namely, the two propositions are contradictory. That such an argument as Berkeley's would eventually imply a subjectivism and a skepticism, as it did in Hume, could only be possible if it were further admitted that experience is subjective. One can call it subjective or any other name he likes. But the fact still remains that the only tests there are for truth are experiences. Such a proposition does not, of course, imply that all experiences are tests, but that tests are experiences. If, then, the connotation of the term "subjective" is such as to be inconsistent with the fact that all attempts at objectivity are based upon experience, it follows that the term "subjective" is in so far inappropriate for some experience, or else those attempts are futile.

Mr. Lovejoy has said that "an experienced datum is conceived as epistemologically subjective if it is not assumed to possess, and therefore to be capable of exhibiting, any 'intrinsic' quality or relation which the intended object of knowledge has within its own spatio-temporal limits."[16] I accept this definition if the significance of "an intended object of knowledge" is taken to involve hypotheses, theories, possible or tentative meanings, etc., occurring, as they normally do, in the process of solving problems. If so, it is not without relation to the subjective world of which we have been speaking. Frustrated desires represent isolation from what, by the fact of being desired, is of immense importance. Spectacular or continual frustration may indeed lead to the supposition that no values can lie in the objective physical world. But it is none the less true that acceptance of such isolation as ultimate represents an impasse in life, an impotence to effect transition, and the final failure of alleged knowledge to be anything other than intrinsically amusing. On the contrary, while frustration and inhibition mean at least temporary isolation from certain important things, they can not possibly mean isolation from all nature. They are occurrences possible only because we are of the world. The situation is objective, and objectively it is one of confusion, suspense, doubt, and conflicting tendencies. Just because of that, there is need for a cognitive act to determine just what specifically is objective.

[16] *Ibid.*, p. 98.

The notion that belief or opinion is subjective, while knowledge is objective, arises because "belief," so used, is taken to mean "mere belief" which in turn, when asserted with emphasis upon the "mere," means that what is held is dubious, questionable, and disconnected from the world as test and experimentation would show it. The experienced convergence of railroad tracks is an example of subjectivity in so far as it is taken to exhibit a quality or relation of the tracks but (it is assumed) does not, i.e., *further experience* will show that they do not converge. Such a definition, it would appear, has no necessary connection with mental and physical worlds, nor does it make a distinction between a world of appearance and a world of reality. An invidious comparison of appearance with reality signifies that certain appearances have proved misleading with reference to certain other more important appearances. The man, who has learned that things are not always what they seem, is not one who has gone beyond experience, but is one who has lost his innocence by having experiences. The subjective-objective relation is not relevant to worlds, final dualisms, or to sensations merely had. It is relevant to a cognitive relation in which what is present stands to the object of knowledge; and only when and where there is such a relation. If this is true there will be no paradox in a further consequence. The "immediate datum" relevant to which questions are raised may be only a part of what is present. And what else is present is neither subjective nor objective. In Berkeley's problem of the "small round tower" and the "large square building" there is a cognitive situation. And there is subjectivity in so far as the first is supposed to but does not exhibit a quality or relation of the latter. Surely, however, there is the very common fact that we do recognize familiar things at a distance, and do, when question arises, figure out pretty accurately what the distant thing may be. The very fact of knowledge is the fact that the present does to that extent furnish ground for prediction, the test of which lies not in another world but in the spatio-temporal future.[17]

The general problem can be stated in terms of perspectives. "You approach the truth about a thing," Mr. Lovejoy says, "only when after changing your standpoint you find some of the characters of the thing remaining the same. . . . The cognoscendum, in short, has always been regarded as a sort of constant."[18] What is directly "there" is simultaneous with the percipient organism. But it is also "there" as promising something that lies at a spatio-temporal distance. One takes thought in order to determine upon

[17] Whitehead: *Process and Reality*, p. 310.

[18] *Op. cit.*, p. 131.

what in the future will be real; upon what is, that is to say, the character of the thing that lies in the perspective ahead.

In the remainder of this paper I wish to enquire what are the further characteristics of this cognoscendum or object of knowledge which Mr. Lovejoy wishes to regard as a sort of constant. He goes on to point out that "the greater and more characteristic part of Einstein's effort, as has often been remarked, was a 'quest of the absolute' which he found in the Minkowskian four-dimensional continuum with its absolute space-time magnitude, the 'interval.' The constructive part of Einstein's reasoning, in short, has throughout been determined by the principle that 'the test of objectivity is invariance for all observers.'"[19] Now I do have even a surprisingly meager knowledge of what Mr. Einstein's doctrine is all about. But just the same, I am under the impression that this "interval" is a transformation equation between different frames of reference. If this is what Mr. Lovejoy takes it to be, and if it is intended as an illustration of a wider doctrine of "epistemological objectivity" as being, so to speak, the transformation equations between different perspectives, then there would be a basis for agreement upon a general doctrine that is exceedingly close to what the objective relativist holds. Presumably this interval, $\frac{1}{\sqrt{1-\frac{v^2}{c^2}}}$, is an achievement of what Mr. Lovejoy means by the "quest for content," an identity in nature. Furthermore:

> That precisely this achievement, which to some epistemologists seems so paradoxical, is the essence of the practical application of knowledge to life, which we name wisdom, is a truism—but it is one which the "doctrine of perspectives" plainly contradicts. What we call, in the practical or moral sense, "seeing things in perspective" is in fact seeing them out of perspective—correcting the foreshortenings and distortions which arise from our transient moods or preoccupations or passions. It is equally evident that the transcendence of standpoints is the essential of that kind of reasonableness which makes man (to some small extent) a social being. In Professor Mead's words:
>
> "It is only in so far as the individual acts not only in his own perspective but also in the perspectives of others, especially in the common perspective of the group, that a society arises and its affairs become the object of scientific inquiry. The limitation of social organization is found in the inability of individuals to place themselves in the perspectives of others, to take their points of view. . . . The social perspective exists in the experience of the individual in so far as it is intelligible, and it is its intelligibility that is the condition of the individual entering into the perspectives of others, especially of the group. In the field of any social science, the objective data are those experiences of the inividuals in which they take the attitude of the community, i.e., in which they enter into the perspectives of the other members of the community."[20]

[19] *Ibid.*, p. 131.

[20] *Ibid.*, p. 132.

I am not overly optimistic about this possibility of general agreement among philosophers. For although Mr. Lovejoy does find something of value stated in terms of perspectives, i.e., Professor Mead's words, nevertheless we are assured that the "doctrine of perspectives" plainly contradicts it. It is true that Mr. Lovejoy cites the Lorenze-Fitzgerald contraction formulæ as an illustration of the achievement of what he means by the "quest for content"; and it is true that Mr. Lovejoy cites Mr. Einstein's work as having vindicated his position. Indeed, Mr. Einstein seems to be very agreeable in the matter of "vindicating." Having vindicated Ptolemy and Copernicus, Bergson and Meyerson, Idealism, Realism, and Pragmatism, he could not conscientiously withhold his good will from Locke. But what Mr. Lovejoy takes to be vindicated here is a psychophysical dualism: for "obviously the data of perception do not consist of the characters which, upon such a view, constitute 'the objective universe disclosed by relativity'; they differ from it far more widely than from the objective world of the older physics."[21] Rosy as all this vindication may be, it, too, has its stickers. And Mr. Lovejoy is not at all unwilling to forego his great advantage. For just what the "content" of this $\frac{1}{\sqrt{1-\frac{v^2}{c^2}}}$ may be, it appears difficult even for Mr. Lovejoy to imagine.[22] Indeed, *how* whatever absolute, that may be indicated by a mathematical formula for the translation from one frame of reference to another, can itself be the Cause (it would not at all be proper to say "causes") of the data of perception, is not only in need of a clever imagination, but also of a thoroughgoing explanation. That such a "content" would be different, quite different, from the data of perception, is true. In fact, it is *so different* that it hardly allows any more the facile picture of variously shaped groups of billiard-ball atoms creating, by some miracle, and mirroring themselves schematically in sensations. It is a relief to find that to Mr. Lovejoy it is a little unconvincing, and perhaps he may pardon others if to them it seems to border on nonsense; the kind of nonsense, that is to say, that will cover a lacuna by a word, which is characteristic of all generative theories. Furthermore, it is interesting to note that a similar difficulty arises with reference to other, though connected, developments in physics. Throughout the volume we are repeatedly admonished to heed in awe the word of the astronomer and the physicist when it fits the philosophical proclivities of the author. But when the

[21] *Ibid.*, p. 147.
[22] *Ibid.*, p. 151.

gentleman of the laboratory proceeds to dissolve the solid world of matter from under the dualist's feet, that gentleman receives in his turn the solemn warning to be "slow in drawing philosophical consequences";[23] he is dubbed an "agnostic,"[24] and informed that he can not long remain satisfied with such conceptions.[25]

The escape from this dualism, so long riddled by criticism, lies along the lines neither of materialism nor of idealism. For fundamentally their methods are the same, in that both convert objects of knowledge into "ulterior realities." Neither does it lie along the line of a philosophy of *Als Ob* or of positivism. For in the one case the notion of science as fiction leads away from an analysis of what in science is true, and what it means to be true. In the case of positivism a similar failure occurs with the rejection of "causes of phenomena" and the insistence upon laws of science as correlations of phenomena. So far as "cause of phenomena" is taken, as it has been taken, to distinguish between a non-experiential physical world and a world of appearance or phenomena, it should, I have argued, be rejected. Its rejection would mean that the world of common experience is a world that exhibits physical characteristics. But causal laws are by no means eliminated, nor do we resort solely to laws of correlation of phenomena.

Any discussion of our problem must recognize the development and use of objects of knowledge or scientific objects in the scientist's laboratory. So far as experimentation is objective, it means that we can come back to what is there in experience. Galileo was dealing with observable things as a test of physical laws. Presumably he was not rolling sensations down inclined planes. When, having made use of instruments and technique to determine the development of scientific objects through controlled observation, and having accomplished this admirable result, he issues an *obiter dictum* upon the subjective and illusory character of experiences and observations, it is not a conclusion that he is drawing from premises thus verified, but in fact a commentary upon his technique and a reopening of the problem. To our question as to what is the status of scientific objects, the only answer that can be given must be one based upon observation of how they are used. Over and above correlation on the basis of Mill's canons or of elaborate developments of statistics, it means the establishment of a structure whereby there may be stated precisely the process by which the result is brought about. High correlation may indeed be *prima facie* evidence that there is a causal relation between events of classes $A$ and $B$, but it does not state that relation. It is essentially empiric, and no neces-

[23] *Ibid.*, p. 285.
[24] *Ibid.*, p. 299.
[25] *Ibid.*, p. 284.

sary relation is shown. The development of scientific objects furnishes a logical structure involving common elements for the analysis of *A* and *B* such that one can be shown to be the function of the other.[26] It can be stated in the form of equations in which the one side is exactly equal to the other. Either, then, there is a fallacy to be detected, or the language is absolutely accurate, not allowing one to read between the lines, every word or symbol having its defined meaning which one may read as he goes along. There is nothing which can be surreptitiously added. Such a statement is inevitably mechanistic, and it excludes magic as Epicurus said. Yet it not only excludes magic, but the contingent, the precarious, the novel, and the qualitative. What I wish to point out is that whether or not man created God in his own image, he has created the physical world,—I mean especially the non-experiential material world—in the image of his logic. It is non-experiential not at all because of our incapacity to experience, as has been so often supposed. I do not deny that there may be "somethings" which we can not experience. I say it would be meaningless either to assert them or to deny them. But physics is not meaningless. The material world is non-experiential for the same reason that it is not qualitative. It is logical and must deal with homogeneous units. Its concepts, mass and energy, are coefficients and integrals. The principle of "conservation" of these coefficients and integrals is the principle of identity required by logic. And what can not be brought to terms with this is non-rational.[27] To those that are primarily interested in the pictures in a book, all this will seem impossible. Like the Hindu geometers, who are said to have proved their theorems by writing "behold" under the diagrams, one may not see that models, diagrams, etc., are useful aids to thinking because they give rise to intuitions. Yet these things have no more to do with the truth of physics than had the superstitions of Kepler with the truth of his three laws.[28] If one is less interested in pictures, it is possible to conceive that truth has reference to the laws of science, rather than to the passing models by which they are developed. The truth and meaning of scientific laws lie in their experimental application to reality.

To sum up, then, the status of the scientific object, "It seems almost too obvious for mention that a scientific object consisting of a set of measurements of relations between two qualitative objects, and itself accordingly non-qualitative, can not possibly be taken, or even mis-taken, for a new kind of 'real' object which is a rival to

[26] Russell: *Our Knowledge of the External World*, 2nd Edition, p. 240.
[27] Meyerson: *Identity and Reality*.
[28] Russell: *Sceptical Essays*, p. 40.

the 'reality' of the ordinary object of experience."[29] "The conception of the physical object is, in considerable degree, the outcome of complex operations of comparison and translation. In consequence, while the physical object is *not* any one of the things compared, it enables things qualitatively unlike and individual to be treated" in regard to their homogeneous characteristics, while their qualitative differences are taken as irrelevancies. "The procedure of physics itself discloses that physical objects can not be individual existential objects."[30] What has been said about physical objects can be said of all scientific objects, hence of psychological objects, i.e., sensations, intelligence, and what not. "The psychologism which considers the psychological elements and their mechanism as reality, is wrong from its roots to its top, and this psychologism is not a bit better than materialism. . . . A psychical element . . . has as little reality as have the atoms of the physicist. Our body is not a heap of atoms; our inner life is still less a heap of ideas and feelings and emotions and volitions, if we are to take these mental things in the way the psychologist has to take them, as contents of consciousness made up of psychical elements."[31]

The real world is a world such as experience presents it. It is a world of "realities" and illusions. It is orderly and precarious, monotonous and novel. Thus do men love, thus do men doubt and thus do men think. Recurring to our friend, the good Saint Augustine, a world to be used must be a world enjoyed.

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## BOOK REVIEWS

*A Critical Analysis of the Philosophy of Émile Meyerson.* GEORGE BOAS. Baltimore: The Johns Hopkins Press. 1930. Pp. v + 146.

What Mr. Boas wishes to accomplish is to interest American students in the monumental work of M. Meyerson and to show them that they neglect this historian and interpreter of science at their own great loss. To make such an attempt by the method of condensing three volumes into one short book is to have great confidence in what one subjects to this treatment. Mr. Boas is justified by the outcome and has to thank both the interest of his subject and his own skill. Initially intending to confine himself to exposition, he found himself caught in problems of interpretation, and since Mr. Meyerson is an historian of science for whom its history shows the

[29] Dewey: *The Quest for Certainty*, p. 130.
[30] *Ibid.*, p. 241.
[31] Münsterberg: *Psychology and Life.*

way to philosophy and instructs in the ardent defence of a philosophical thesis, Mr. Boas finds himself also compelled to criticism. This small book of 146 pages offers good measure of information and argument.

The arrangement is that of separate treatment of the three volumes, *Identité et Réalité,* the only work of Meyerson's that has been translated into English (the translation, by Kate Loewenberg in 1930 in the Library of Philosophy series, preserves the flexibility and grace of style of the original); *De l'Explication dans les Sciences; La Deduction Relativiste.* M. Meyerson's thesis is the same throughout, his learning and philosophical skill making the theme of inexhaustible interest. A diagrammatic simplification of his account of thought might well precede an attempt to convey a little of the argument by which he supports it. The scientist, like the ordinary man, faces multiplicity and lives in a changing experience, and he needs to understand, to explain. Luckily he is provided by his nature with principles that attend to this for him. These principles are themselves only one, and that is as it should be, for the principle is that of identity, and it is well that it is itself conformable to the test of reality it imposes on all else. Experience offers us variety, individuality, change; these our mind can not accept; fortunately, the reason why it can not accept them is because it is actuated by principles that explain them by gradual and methodical denial. What provides our intellectual difficulties provides also their cure. And why not? If the principles of thought are both *a priori* and powerful enough (for M. Meyerson their operation is inevitable), they are a sure cure for any intellectual difficulty—an intellectual difficulty being just a situation in which they are about to but have yet to operate. The only disturbing possibility is the suspicion that the cure they effect may be no better than the disease. This may seem like a flippant, at least a frivolous, rendering of the conclusions of M. Meyerson's magnificent investigation of the history of science. It is not intended to belittle the brilliant success of the scrutiny to which he subjects its processes. His own attitude toward his findings is hard to determine. He describes the situation he enables us to envisage and in which he makes his reader feel very much at home as paradoxical; he does not deplore the habits of thought that repeatedly lead to it; he thinks them justified by their success and moreover necessary. Whether human nature can so change as to make a different method of thought possible remains to be seen—if I understand him. Meantime as an historian of science he waits for a new science before describing it, and while human nature is as it is he does not do anything so foolish as to ask it to be different. And

the results for science are not so negative as might at first appear. That the mind has to deny special qualities and change in its need for metaphysical identities is not the frustration but the birth of science. Our attempt to apply a principle which nature must reject provides perpetual opportunities for thought and a series of immediate successes for science. As for validity, nature must be partly identical, else the principle of identity could not apply so well as it does; it can not be wholly so since thus it would cease to be, and also thus the principle of thought which is the reduction of the diverse to the identical would have no chance to operate. So we do well to cherish a habit of thought from which, moreover, we have no escape.

What these three volumes offer is concrete proof of how man thinks, whether as scientist or common-sense man, how man must think, and how his thought at once succeeds and fails. That the scientist, as always inevitably also a metaphysician, aims at results that are a mockery of his efforts, is not for M. Meyerson a realization that leads to a sceptical estimate of thought, for thought is satisfied by this performance, and also it achieves empirical results, comes upon facts that confirm the worth of a method and a principle to which it is anyhow by its very nature committed. The earliest known and the latest scientific theories, the testimonies of numberless scientists, are marshalled in different formations but always to the same end. The same thesis recurs with changing data, restated, reëxamined, enforced with increasing rigor and with more full-blown metaphysical conclusions. It is never simply reiterated, so able is M. Meyerson always to turn to view new facts and to take advantage of the increasing power of his massed evidence to develop its complete consequences. The motives that control our thought are no more present to us in their actual operation than are our other motives, to the scientist no more than to the ordinary man. Only an examination of the history of science can disclose what has directed its course. And the revelation is not only of what has been the motive, but that the motive is provided by the nature of thought in the operation of its *a priori* principle of identity. That it is at variance with the phenomena is not a defect, but a provision for the perpetuation of thought, and an arrangement by which it is always in position to secure results, for nature will never present itself as explicable, but always from its nature and ours as demanding explanation from minds that can never resist the chance again to explain.

Science makes use of two principles, what M. Meyerson calls the principle of legality and that of causality. The first states laws —that water always boils at 100° C. It is by observation and the

power of generalization that the mind secures specific laws, but the principle of legality requires more than the exercise of these natural powers. It requires a conviction far in excess of any evidence, the conviction of conformity to law. Yet a scientist may well doubt whether he is in a position to discover the particular law of which he is in search, but "never has any scientist worthy of the name doubted that nature, even in its most intimate recesses, was entirely subject to law." (This was written before certain recent utterances.) The principle of legality asserts the indifference of space; wherever the requisite conditions occur they will operate according to law. But time betrays us. The dog that will remain the same wherever I carry him in space, will grow old and die in time, and to explain how this can be we require the principle of causality. "The law simply states that, conditions happening to be modified in a determined manner the actual properties of the substance must undergo an equally determined modification; whereas according to the causal principle there must be equality between cause and effect—that is, the original properties plus the change of conditions must equal the transformed properties" (Eng. trans. of *Réalité et Identité,* p. 41). Quotations from scientists and philosophers show that the formula of Lucretius, *Nil posse creari de nihilo,* or that of Anaxagoras "Nothing comes into being and nothing passes away" are but the proper measures of the meaning of causality. Now the principle of causality is not necessary for action; it is not confirmed but contradicted by our sensations, for these inform us of constant change; it is necessary to our thirst for understanding and so was well called by Leibniz the principle of sufficient reason. Despite various attempts science has made to stick to law, explanation is always also demanded both by common sense and by science. To understand the present we look to the past and so start a process of explanation that works as such only as in some way we equate past with present. Elements persisting under change is the device by which we eliminate time, the series of equated changes being just that herculean achievement of the human intelligence. Identities are differently conceived in different fields—the atom and the conservation of matter and energy in physics, the fundamental element in chemistry, the idea of heredity in biology. The substance of *Identité et Réalité* is the demonstration that all the great historic scientific theories have been sought and cherished as they provided identities, have been valued as they served to show that what underlies appearances are ontological entities persistent in time. In this attitude and performance science is not deliberately philosophical; it is necessarily and essentially so, for explanation, which by na-

ture we crave, can occur only as through apparent changes we look to the persistent reals that make the changes both possible and explicable,—and also non-existent. We might add that our need so to explain them makes them also need no explanation since explanation thus occurs only as denial.

A brilliant passage in the last chapter of *Identity and Reality* insists on this view of science as fundamentally ontological, and in following passages M. Meyerson draws forth some of the curious and admirable consequences of the perverse wisdom of the ontological habits of thought. To quote scattered passages: "The ontological character of scientific explanation is ineffaceable. Doubtless, through the unity of matter it finally ends in uniform and empty space. . . . If we take the world of scientific theory at the moment, so to speak, when it is going to evolve into nonentity, we shall find it as ontological as that of the reality of common sense; the singular points of the ether, in so far as we differentiate them from their medium by any means whatsoever, will be just as real, just as much *objects,* and even more fundamentally independent of us and our sensation than anything in our perception. Explanatory science, indeed, rejoins absolute idealism or solipsism, but it is only in complete acosmism that these two ways encounter each other. Between these two parallel lines along which science and philosophy, each one by itself, tend to destroy reality, one can not imagine any point in common, except one situated in infinity." "Indeed, in creating science, man has constantly obeyed his causal instinct; starting from sensation, he has unceasingly tried to explain it, to make it yield to the exigencies of his reason. Therefore, what will be most general in science will necessarily be also a form of these exigencies, and, consequently, a conception saturated with the *a priori:* a causal hypothesis such as that of the persistence of qualities and especially the atomic or mechanical theory. And so it is that believing to generalize the results of experience we succeed paradoxically in liberating our conceptions, prior to experience, from the restrictions imposed by experience." "It was wrong to have called causal hypotheses simple instruments of research, 'working' hypotheses. They are more than the scaffolding destined to disappear when the building is constructed. They have their own value; they correspond certainly to something very profound and very essential in nature itself." "We know that reason proceeds from identity to identity; it can not therefore draw from itself the diversity of nature . . . the order of nature can not be entirely conformable to that of thought. If it were, there would be complete identity in time and space—that is to say, nature would not exist." "In postulating the intelligibility of nature it ends in its complete destruction."

M. Meyerson displays how full of contradictions are the various conceptions by which science provides the identities required. Science shifts from ingenuity to ingenuity to secure explanatory concepts; however "shaky" are the conceptions employed reason will do its best to put up with them, for we must find the world intelligible. Mechanism has had perhaps the longest history and has made the most sweeping claims to explanatory virtue. And yet its attempt to explain all phenomena as arising from identical entities moving in space has had a far from satisfactory development. It has had one of those histories with which M. Meyerson makes us familiar, in which science proposes a description of its explanatory entity only to retreat from the absurdities or inconceivabilities invoked to other forms of entity similarly or worse furnished. Yet science will put up with these since it must have identical entities. And because of what we undertake to explain and the only form of explanation we will accept, nature will always resist explanation. To the objection that we have no more "reason" to find change inexplicable than persistent entities M. Meyerson would reply, that at any rate science has moved in explanation from the diverse and changing to the identical and eternal and that it thus reveals that the reason craves identities.

There is continuous resistance to our efforts by which nature makes them always only paradoxically successful, there are also defined forms of resistance recognized by science in Carnot's principle which provides for science the other aspect of its view of nature.

The validity of the principle of identity is two-fold—in its source in a necessity of our nature, and in what we must come to believe a partial conformity of nature to its implications. Again the partial non-conformity of nature provides its opportunity and also provides nature. "Nor must we ever lose sight of the fact that we do not know where the analogy between mechanism, or, better still, between the causal conception of the world and nature ceases. The only thing of which we are sure is that it must cease somewhere. If, then, we come upon a phenomenon which does not seem to conform to this conception, we doubtless have the right to try every way of making it conform; but we are not permitted to throw it aside, or reject it, if it appears unruly. It may be precisely that the future has many ideas of this kind in store for us. After having sought a long time for what especially persists, science, since the importance of Carnot's principle has been clearly recognized, is turning its attention more and more toward that which is modified, toward perpetual flux, and it is clear that on this ground causal considerations will always be more or less at fault." The argument here would seem to say that thought may

understand nature in terms of both identity and change. But that would be to refuse to thought its peculiar and single character of explanation, and to refuse to recognize that explanation takes place by reducing apparent change and specific qualities to alleged identities. Though explicative science may not, empirical science may penetrate *becoming*. "Change in time is its proper domain. That is why science is more and more dominated by Carnot's principle." "What it formulates is a tendency of things to be modified in time" (*Identity and Reality*, pp. 284–285). "It is we who try to establish identity in nature, who bestow it upon her, who 'suppose' it hers. And that is what we call understanding and explaining nature. It yields itself to a certain extent, but it also resists. Reality rebels and does not allow us to deny it. Carnot's principle is the expression of the resistance which nature opposes to the constraint which our understanding, through the principle of causality, attempts to exercise over it" (*Ibid.*, p. 286).

But the unconvinced might ask, why should nature oppose our attempts to impose identity upon her at points where the resistance is not that of successful rebellion, if identity is partly her character and if she is partially "in agreement" with the principles of our minds? And why is it fortunate that absolute identity is an ideal of thought, if nature is both changing and identical? Is it on the assumption that the surface appearances of nature, its conspicuous features, are those of change so that it is well that we are fanatic in the pursuit of identities? In the last part of the concluding chapter of *Identity and Reality* M. Meyerson attempts to affect a reconciliation between belief in law which deals with changes and the principle of identity which denies them, but he has to conclude that they operate independently, at least for contemporary man.

In *De L'Explication dans les Sciences* he offers further evidence for the ontological character of science as found in the theoretical difficulties of the positivistic proposals and in the actual and necessary departure from the positivistic program in practice,—a departure always effected by the urge of the principle of identity. He tries to prove that positivism, properly interpreted, would restrict science to sensations only, causal explanations of these in any kind of "thing" behind them being prohibited. And it would be at a loss when it tried to secure the only data permitted it, for these become more and more difficult to find; as M. Bergson has pointed out they are hard to extract, and now, Mr. Boas adds, Gestalt psychology would deprive them of the genetic priority that would give them positivistic purity. Positivism has not felt itself as frustrate as it should; by various methods it has found its way to

ontological assumptions and goals. The object of common sense, science must *always* replace by other objects whether independent and absolute laws, or chemically pure and therefore ideal substances, or the other children of theory, the fictitious and non-observable entities which science brings forth. Mr. Boas agrees that the scientist does not believe that he is studying his sensations, but he doubts and raises arguments against the contention that a positivistic science is logically committed to phenomenalism. M. Meyerson again interprets these scientific objects as more refined forms of the physical objects of common sense, serving the same purpose, instruments of identification that provide the causal explanation of the variability of sensation. Even in using them the scientist knows in some sense that what makes them serve his purpose is also what makes them fail to serve it, for that they are quite other than what they have to explain both gives them explanatory status and creates anew the problems to solve which they were summoned. Their persistence in science must then be due to a "metaphysical hunger for absolutes," and denotes the *a priori* character of the principle that devised them. Science can not be and is not positivistic, it must be and is ontological. Mr. Boas accepts as authoritative Mr. Meyerson's account of scientific practices, but he raises among others the objections that either science need not in these matters be taken seriously,—or else that the scientist does not take himself seriously, or literally, when he seems to explain by "reducing." He points out especially that "identity" is plainly often not employed in science with a literal or rigid meaning. The term "equation" is employed in science to indicate other relations than that of literal identity, their meanings open to observation. Moreover science and mathematics handle inequalities and other forms of asymmetrical relation. We can reason by the aid of any relation the nature of which we can know; "all forms of relations do not lend themselves to the identification of their relata but on the contrary some presuppose their fundamental difference" (pp. 99–100). Mr. Boas's general objection is that the theory that reason can not grasp changing things is due to the defects of classical logic, to its theory of the concept which introduced the notorious mystery of the relation of the essence to the existent. He outlines the possibilities of a form of reasoning in which the concept is taken as symbolic and practical and in which we deal rather with relations than with equated essences.

In *Déduction Relativiste* M. Meyerson faces the possibility that there has now arrived a new science, which is a consistent positivism, the meaning of its concepts firmly attached to experimental procedure, eliminating not experience but the personal equation,

aiming not at something beyond appearances but at a kind of "transcendental unity of apperception." Now M. Meyerson admits that the special theory of relativity was a genuinely positivistic science. But the general theory, by its very intention to view the world from the point of view of any observer, that physicists might not be condemned to isolation in some given system of reference, directly contradicts the central point of the special theory, —the recognition of our inability to escape some observer's point of view. The general theory does what has to be done if we are to have a science of physics. Mr. Boas argues that what the general theory carries through is properly described as legalism rather than causalism. M. Meyerson contends that the Einsteinian framework of space-time is the latest attempt of physics to substitute for the permanent physical *object* of common sense a scientific object. Mr. Boas argues—I fear that I damage his argument in transmision—that Einstein's space-time has at least a different kind of ontological status from the common-sense object or the fictitious entities of science; the measurements of individual observers are not denied by but deducible from this conception. M. Meyerson argues further that though some modern physicists would treat time as not on a par with the three other dimensions, still in general they prefer to spatialize it, and so continue to demonstrate the demand of the reason that time as such be eliminated, be reduced to space in the interests of identity. In so far as M. Meyerson's arguments are based on his description of relativity as a geometry, Einstein has protested, against this characterization, that the use of geometrical conceptions does not make of a science a geometry; he is not geometrizing his conceptions, he is discovering what geometry fits them best. He is using a "practical geometry," which "rests essentially on induction from experience, but not on logical inferences alone." M. Meyerson would recognize this in part, from the point of view that nature will not submit itself wholly to rationalization, not that reason is irradiated by or can take any color from the light of experience. He finds here no change in the nature of reason; it still seeks identities. Common sense, science, in its latest as in its earliest developments, turn always from phenomena, from appearances, to "reals" that explain and deny them. In the farthest reaches of thought reduction is resisted at a point just short of nonentity.

I have referred—too slightly—to but a few of Mr. Boas's objections. As against M. Meyerson's authoritativeness, he modestly urges that though they may be ill taken yet they are properly raised, since their answer is not obvious, and that if answered it would be to the still greater impressiveness of M. Meyerson's philosophy. Meantime he can render only the Scotch verdict,—not proven.

It seems unnecessary to say that there are well-known attempts to give other interpretations to the conceptions that science uses; no doubt science would protest that there has not lurked behind its use of causality the principle of identity, that the entities it employs do not need to be metaphysically intended. (Indeed, and not least frequently in the recent past, certain scientists have made plain their interest in a quite different and quite non-scientific form of ultimate reality.) Yet surely they have often been handled as if of the penetralia, of the inner essence. At any rate there is need of more attempt to show, in distinction from what it is not, what their status is. Bertrand Russell's assertion that "in the motions of mutually gravitating bodies, there is nothing that can be called a cause and nothing that can be called an effect; there is merely a mathematical formula"—seems to offer a mathematical metaphysical heaven. Whitehead deplores such sentiments about mathematics as would make it the Hamlet of the drama in which we try to figure forth the nature of reality, whereas its part is but that of Ophelia,—an essential rôle, a very charming creature—and a little mad. When he adds—"Let us grant that the pursuit of mathematics is a divine madness of the human spirit, a refuge from the goading urgency of contingent happenings,"—is not this to give to human thought the same rôle M. Meyerson describes, if to view it more as a poetic excursion than as a kind of vacation to the final refreshment of science. M. Meyerson would exempt science from any responsibility for defining its motivating principles, for in the first place as unconscious they escape observation, and in the second, science is well enough occupied. Contemporary science, however, shows signs of permitting itself to be seriously philosophical. How far it is dispensing with identical entities as explanatory ideals is perhaps more plain to the participants than to the onlooker. Is the present special concern for "operations," functions, events—stimulated perhaps by recent developments of the philosophy of change—a new implied metaphysics, and the road to a new logic with concepts as averse to permanence as those of the older logic are accused of being averse to change? Is it to reconstruct thought, or to argue for new logical dogmas?

Obviously an answer to M. Meyerson would require arguments that would refute both his interpretation of science and his *a priori* characterization of thought. The first argument would in part provide the evidence for the second, for his conviction as to the *a priori* character is based on the demonstrated presence of the same principle throughout the entire history of science. Other interpretations of science have tended to be in part protests against the habits that M. Meyerson alleges, and so at the same time that they contradict they give weight to his position. Moreover any explicit instances to the

contrary he would consider doomed to capitulate, as have similar attempts in the past, to the inherent need of the mind,—or to be indeed but self-deceived forms of its search for identities. He acknowledges efforts to maintain the Aristotelian conception of change, but always it is found finally unassimilable—alien to thought. He would deplore neither the capitulation nor the deception, for these are, if curious yet profitable ways by which thought, behaving as it must, reaches a knowledge of what is partly true of things though by the method of denying what is also partly true. In some way science gathers in these denials and transforms them.

How to interpret M. Meyerson's "partly true" is another question to ask, for "partly" here must refer to "kind of" truth, a "sense in which" true, and that is to raise the epistemological problem all over again. It is one of those phrases of avoidance that slip into any dualistic argument. To do no more than assert of each of two contradictory versions that both are partly true is to face the dilemma, not to solve it. So long as thought preserves its natural character of satisfaction only in identities he would say that no solution is called for. His fundamental conviction is that we can believe only in a real that is permanent and self-identical. We are metaphysicians by reason of an unconscious urge, not even by biased preference, for in no sense do we choose. We inevitably seek intellectual contentment and can find it only in one form. Facing change and special qualities, we reject them for the reals we must believe in behind them. What our minds can neither accept nor see a way to reject, in some sense informs us of the other partially true nature of things, but thought can not acknowledge this information (*empirical* science, but not explicative science, may tentatively accept it) and must continue to combat it. It would seem as if the way out would be to reject metaphysics—or this notion of metaphysics; to give up this characterization of intelligibility, rationality. There is, of course, the refuge of scepticism or at least of a "partial" distrust of a reason so perversely occupied. That M. Meyerson will himself take to that is the expectation of the reader at many points in the discussion. He conducts the argument with great dramatic skill, its outcome often in doubt, but it becomes clear enough finally that he sees the perpetual blindness of thought, the perpetual resistance of nature to thought, as ensuring the progress of science. Nor is there opportunity in the situation he describes for correcting these habits of the reason even if they worked ill, or were subject to change. Whatever challenges the principle of identity, only provides for its resumed operation. It is in the nature of the mind always to seek identities as it is in the nature of experience always to give us a chance to; to distrust its use has the irrelevance of futility.

Fundamentally, then, M. Meyerson's theory is, as he says in his

preface, an epistemology, in which human thought is seen as pursuing ends it is not aware of, persistently, inevitably, in controversion of phenomenal experience. Nature reveals in the phenomena one aspect of itself. Reason, on the conviction that this can not be its nature, discovers the other. If reason could operate as it would, it would overreach itself and would destroy the conditions under which it operates by identifying all existence into nonentity. Thought thus seems engaged in an awkward game of cross purposes, and yet it achieves a perpetual avoidance of disaster, is an instrument of continuously fruitful effort. That reason might come to act in less self-deceiving fashion is idle speculation, and an historian of science will prefer to await the event before having an opinion of its benefits. Meantime all men are unconscious "metaphysicians" enjoying "partial truths," and science as a result of "metaphysical" efforts comes into possession of an increasing amount of "facts."

The reviewer is ill-qualified to transmit, as does Mr. Boas, M. Meyerson's strictly scientific argument or to do justice to the objections Mr. Boas raises. In addition to those that he develops at some length he suggests briefly other possibilities of dissent. He makes plain his enthusiasm for the power and the scope of an argument that yet does not convince him. It will not be his fault if he fails to increase interest in the work of M. Meyerson. We are probably most of us engaged in rejecting rather than in sharing M. Meyerson's notion of reason; if we could share his learning and employ our minds on it with comparable skill our rejection might bear some fruit.

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*The Principles of Reasoning.* DANIEL SOMMER ROBINSON. New York: D. Appleton & Company. Second Edition. 1930. Pp. xviii + 393.

Since the first edition of this work, which appeared in 1924, was well reviewed by Professor M. T. McClure in Vol. XXII, No. 6, of this JOURNAL, there is but little for the present reviewer to say. So few changes, too, have been made in the text that one might well question whether it should not be called a second impression rather than a second edition. There are approximately fifteen pages of new material added here and there, and about one-third of a page omitted. These additions consist of a two-page discussion of the *Gestalt* psychology, as reinforcing the implicative system which Professor Robinson regards as fundamental; about one and one-half pages devoted to the Dewey Decimal System in connection with the author's treatment of classification; a page and a half

presentation of the Pearson correlation formula; approximately one page added to the discussion of Mill's Method of Residues; two-thirds of a page presenting analogy and circumstantial evidence; and about six pages of new material completing the discussion of various other methods of explanation. There is also a page of definitions of logic, facing the first page of the text, while a chart of the conditional syllogisms faces page 163, and a footnote discussion takes up most of page 215. The chief change, however, appears in the exercises, which are almost entirely new and aggregate about thirty-two pages. These together with those found in the first edition constitute a real treasure-house for such material. The extensive Bibliography of the first edition has also been increased by about a page and a half of new titles. Several errors, typographical and otherwise, which still remain, may, it is hoped, be eliminated, if there should be a third edition. The book has evidently met a real need, since this new edition has appeared about six years after the first one, but, as Professor McClure truly remarked in his review, it is really an introduction to philosophy as well as being a logic, and thus serves a double purpose.

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## JOURNALS AND NEW BOOKS

PHILOSOPHICAL REVIEW. Vol. XL, 4. An Annonymous Treatise: *Lynn Thorndike.* Some Descriptive Properties of Relations (I): *Henry Lanz.* "The Paradox of the Time-Retarding Journey": *Evander Bradley McGilvary.* On Negative Facts: *A. Ushenko.*

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## NOTES AND NEWS

We have received the following notice of the Prize Competition organized by the Sociological and Philosophical Societies in Vienna (Soziologische Gesellschaft und Philosophische Gesellschaft, Ortsgruppe der Kantgesellschaft in Wien):

Theme: The Development of the Sociology of Cognition and Knowledge since Wilhelm Jerusalem.

Prize: 1000 Shillings Austrian Currency (30£).

Wilhelm Jerusalem was the first to demand a sociology of knowledge, in an essay entitled "Soziologie des Erkennens" (Sociology of Knowledge), published on the 15th of May, 1909. His researches in the sociology of cognition and knowledge were continued in his "Einführung in die Soziologie" (Introduction into Sociology, Publications of the Sociological Society of Vienna, 1st Volume) as well as in his treatise "Die soziologische Bedingtheit des Denkens und der Denkformen" (The Sociological Conditions of Thinking and of the Forms of Thinking) published in Max Scheler's *Versuche zu einer Soziologie des Wissens*, 1924.

These essays emphasize the great importance to future thinking of sociological criticism of human reason.

Since then investigations in this field of science have been continued by German as well as foreign scholars. It is the task of the entrant to show this development from the first manifestations up to the present. The competitors have to show on what foundation Wilhelm Jerusalem's doctrine rests, in what way it has affected subsequent work; which of the problems raised by Jerusalem are still waiting to be solved, and lastly what place the sociology of cognition and knowledge is to hold in the joint domain of sociology and epistemology.

The character of the essay should be strictly scientific and the treatment of the matter as objective as possible. The competitor is, of course, given full liberty to put forward his own standpoint. The essay should be 15,000–30,000 words in length. Both shorter and longer essays, however, will be admitted for competition.

The essays may be written either in German, French, English, or Italian. Essays in other languages will also be accepted, but a translation into one of the above-mentioned languages, authorized by the author, must be attached.

In place of the entrant's name each essay must bear a motto; the name and address of the author is to be added in a closed envelope which must be marked with the same motto.

Essays must be sent to Dr. Walther Eckstein, Wien XVI, Kirchstetterngasse 49, not later than the 31st of December, 1932.

The jury consists of: Prof. Max Adler, University of Vienna; Prof. Karl Bühler, University of Vienna; Dr. Walther Eckstein, Vienna; Dr. Rudolph Goldscheid, President of the Sociological Society in Vienna; and Prof. Karl Roretz, University of Vienna.